

LESSON PLAN

Session	::	Winter – 2022
Course Type	::	Theory
Semester/Branch	::	3 rd Semester, ELECTRICAL/ETC
Subject (with code)	::	Engineering Mathematics-III (TH-1)
Contacthours/week	::	4 hours
Name of Faculty	::	Dillip Ku. Barik , Dr. Pravakar Jena , Satyajit Mohapatra

SL.NO.	CLASS ID	COURSE CONTENT	MODE OF DELIVERY	EXHIBIT/ REFERENCE
1	1	Introduction to syllabus and evaluation scheme	Lecture Explanation	Materials of SCTE & VT
2	2	Define real and Imaginary Numbers and power of i with related examples	Lecture Explanation	Study Materials
3	3	Define complex number, algebra of complex numbers, equality of two complex numbers, conjugate and modulus of a complex number with related problems	Lecture Explanation	Study Materials
4	4	Properties of complex numbers, Determine Inverse of a complex number and express in the form of $a+ib$ with related problems	Lecture Explanation	Study Materials/ Elements of Mathematics Vol-1(OSB)
5	5	Determination of the cube roots of unity and their properties with related problems	Flipped class	Study Materials/Te xt Book of class- XI,NCERT
6	6	Explain Geometrical representation of a complex number, polar form and argument of a complex number with related problems	Lecture Explanation	Study Materials
7	7	Determine square root of a complex number, State Demoivre's Theorem and solve related problems	Lecture Explanation	Study Materials/ Elements of Mathematics Vol-1(OSB)
8	8	Assignment Discussion on Complex numbers	Prompt & Clue	
9	9	Introduction of matrix and its basic concepts, Types of matrices, Addition, subtraction and multiplication by a scalar	Flipped class	Study Materials/Te xt Book of class- XII,NCERT
10	10	Transpose of a matrix, sub-matrix and minors, Rank of a matrix and its problems	Lecture Explanation	Study Materials/

				Text Book of Engg. Math part-3(KP)
11	11	Elementary transformation and its uses in finding rank, Row Reduction Echelon matrix and related problems	Lecture Explanation	Study Materials/ Study Materials of SCTE & VT
12	12	State Rouche's theorem for consistency of a system of linear equations in n unknowns and solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
13	13	Solve more problems on test of consistency	Lecture Explanation	Study Materials
14	14	Assignment Discussion on Matrices	Prompt & Clue	
15	15	Define differential equation , Order and degree of differential equation with examples	Flipped class	Study Materials/Text Book of class-XII,NCERT
16	16	Define Homogeneous and Non – Homogeneous Linear Differential Equations with constant coefficients with examples.	Lecture Explanation	Study Materials
17	17	Rules for finding complementary functions for real roots and related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
18	18	Rules for finding complementary functions for complex roots and related problems	Lecture Explanation	Study Materials
19	19	Define Inverse differential operator and rules of particular integral for exponential function with related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
20	20	Rules for finding particular integral for algebraic, Trigonometric and $e^x f(x)$ with related problems	Lecture Explanation	Study Materials
21	21	Assignment Discussion on Differential Equation	Prompt & Clue	
22	22	Partial differential equation(PDE) of first order	Flipped class	Study Materials
23	23	Formation of a PDE eliminating arbitrary constants and functions and solve related problems	Lecture Explanation	Study Materials/Text Book of Engg. Math part-3(KP)
24	24	Linear partial differential equation of first order ($Pp+Qq=R$) and Explain method of multipliers and grouping, Solve related problems.	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
25	25	Assignment on Partial Differential Equation	Prompt & Clue	
26	26	Define gamma function and its uses, Define	Lecture	Study

		Laplace transformation of a function $f(t)$ and its existence	Explanation	Materials/ Text Book of Engg. Math part-3(KP)
27	27	Derive Standard formulas of Laplace transform and related problems	Lecture Explanation	Study Materials
28	28	Explain Linearity property and 1 st shifting property of LT and discuss related problems	Lecture Explanation	Study Materials
29	29	Formulate Laplace transform of Derivative and integrals , solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
30	30	Formulate Laplace transform multiplication by t^n and division by t , solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
31	31	Derive formulae of inverse L.T. and explain method of partial fractions , solve related problems	Lecture Explanation	Study Materials/ Study Materials of SCTE & VT
32	32	Assignment on Laplace Transform	Prompt & Clue	
33	33	Define Periodic functions with examples , odd and even function and define fourier series(F.S)	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
34	34	Explain Eulers formula in different intervals and its use in fourier series of a function, Solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
35	35	State Dirichlet's condition for the Fourier expansion of a function and it's convergence with examples	Lecture Explanation	Study Materials/ Study Materials of SCTE & VT
36	36	Express even and odd functions as a fourier series form, solve related problems($0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi$)	Lecture Explanation	Study Materials
37	37	Obtain F.S of continuous functions and functions having points of discontinuity in ($0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi$) with related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
38	38	Define polynomial function , algebraic and transcendental equations with examples , solution of Algebraic equations	Lecture Explanation	Study Materials
39	39	Express direct and iterative method, Derive Iterative formula for finding the solutions of Algebraic Equations by Bisection Method , Solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
40	40	Explain Newton- Raphson method and Solve	Lecture	Study

		related problems in algebraic form only	Explanation	Materials/ Text Book of Engg. Math part-3(KP)
41	41	Explain finite difference and form table of forward and backward difference , solve related problems	Lecture Explanation	Study Materials
42	42	Define shift Operator E and establish relation between the operators .	Lecture Explanation	Study Materials
43	43	Define Interpolation , Derive Newton's forward interpolation formula for equal intervals and solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
44	44	Derive Newton's backward interpolation formula for equal intervals and solve related problems	Flipped class	Study Materials/ Text Book of Engg. Math part-3(KP)
45	45	State Lagrange's interpretation formula for unequal intervals and solve related problems	Lecture Explanation	Study Materials/ Text Book of Engg. Math part-3(KP)
46	46	Quiz Test-2 on PDE , LT and FS	Examination	
47	47	Explain numerical integration state Newton's Cote's formula and Trapezoidal rule, solve related problems on Trapezoidal rule	Lecture Explanation	Study Materials/ Study Materials of SCTE & VT
48	48	State Simpson's 1/3rd rule and solve related problems	Lecture Explanation	Study Materials/ Study Materials of SCTE & VT
49	49	Assignment Discussion on Lagrange's and Numerical Integration	Prompt & Clue	
50	50	Class Test-3on FS and Numerical Analysis	Examination	
51	51		Collaborative Thinking	
52	52	Previous year question Discussion	Collaborative Thinking	

Signature of Concern Teacher